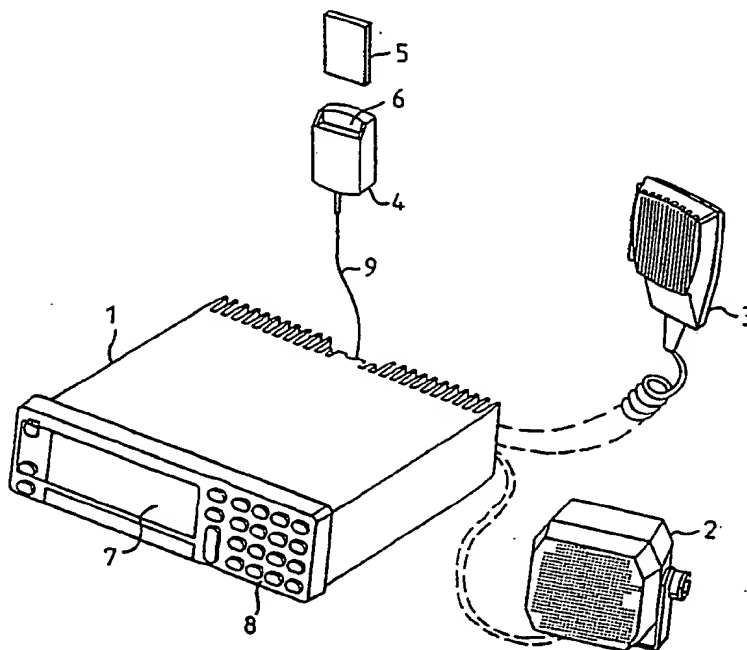




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(21) International Application Number: PCT/FI93/00065 (22) International Filing Date: 24 February 1993 (24.02.93) (30) Priority data: 920914 28 February 1992 (28.02.92) FI (71) Applicant (for all designated States except US): NOKIA TELECOMMUNICATIONS OY [FI/FI]; Mäkkylän puistotie 1, SF-02600 Espoo (FI). (72) Inventor; and (75) Inventor/Applicant (for US only) : KOVANEN, Jari [FI/FI]; Visalantie 1 B 14, SF-40270 Palokka (FI). (74) Agent: OY KOLSTER AB; Stora Robertsgatan 23, P.O. Box 148, SF-00121 Helsinki (FI).		(81) Designated States: AU, GB, JP, NO, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> <i>In English translation (filed in Finnish).</i>

(54) Title: RADIO TELEPHONE**(57) Abstract**

The invention relates to a radio telephone, comprising a microprocessor circuitry (22), a memory (23, 26), an alphanumeric display (7), a keypad (8), and a reading device (4) in which a removable memory (5) can be inserted to enable reading under control of the microprocessor circuitry, the memory containing the individual data of a radio subscriber. According to the invention said removable memory (5) also contains versions of the texts to be shown on the alphanumeric display in the languages selected by the user.

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Radio telephone

Field of the Invention

5 The invention relates to a radio telephone or
the like, comprising a microprocessor circuitry, a
memory, an alphanumeric display, a keypad, and a reading
device in which a removable memory can be inserted to
enable reading under control of the microprocessor
circuitry, the memory containing the individual data of
10 a radio subscriber.

Background of the Invention

15 A user interface of radio telephones and corre-
sponding radio devices typically comprises a keypad and
an alphanumeric display. Via the keypad the user may
dial telephone numbers, select different modes of opera-
tion and even write messages to be transmitted further.
On the display are generally shown the current contents
of the keypad buffer and different information relating
20 to the operation of the phone, such as instructions to
the user and data on the calls. In order to minimize the
number of radio telephone types manufactured, stored and
sold, it would be advisable for all the radio telephones
to display identical texts. However, in order that the
25 use might be facilitated and possibly also because of
the different requirements set by different systems, the
texts should be displayed in the user's own language,
wherefore at least in different countries different
texts or texts in different languages are needed.

30 German Offenlegungsschrift 3,838,677 discloses
a radio telephone in which the loss of important data
caused by the user is prevented during the operation of
the radio telephone by storing the data in a removable
memory card, in which are also stored the identification
35 data of the radio subscriber. These important data in-

clude e.g. the last call and the mode of function of the phone. The subscriber data can be transferred from one radio telephone of a system to another similar phone in the same system by means of a memory card, which enables
5 shared use and even renting of telephones. However, since radio telephones are provided with texts on the display in a specified language, the user may have to use a telephone in which the texts on the display are in a foreign language.

10 In the PCT application WO91/12698 a radio device is provided with a removable memory module, the information stored in the module defining the call functions available. In addition, a SIM card contains data which renders the phone to operate in a desired
15 manner, e.g. in a specified language. Texts in different languages are permanently stored in the memory of the radio device; the data in the memory module only gives instructions as to which language to use. The problem is the high price of the memory capacity needed, where-
20 fore the number of languages is limited.

Disclosure of the Invention

The object of the invention is a radio telephone or the like in which different texts on the display or texts in different languages are simple to use.
25

This is achieved with a radio telephone of the type described in the introduction, the radio telephone according to the invention being characterised in that the removable memory also contains versions of the texts
30 to be shown on the alphanumeric display in the languages selected by the user.

In the invention all the texts on the display are stored in a removable memory, such as a memory card or module, from which they can be read to the alphanumeric display of the radio telephone. Due to the
35

invention the texts on the display of any radio telephone can be easily shown in a language selected by the user simply by inserting a removable memory, in which the texts are in the language selected, in the reading device of the radio telephone. In the same way the texts shown to the user on the display may be changed e.g. according to the country, radio telephone system or even the user.

In one embodiment of the invention, alpha-numerically displayable texts are stored in the memory of a radio telephone in one language, which is used as a default language when a removable memory is not in the reading device. The microprocessor circuitry fetches a translated version for the default language text from the removable memory and displays the translation on the alphanumeric display.

In another embodiment of the invention essentially the entire user interface software of the radio telephone is stored in a removable memory and the remaining portion of the operating system of the radio telephone is stored in the memory of the radio telephone. The microprocessor circuitry loads the user interface software from a removable memory to the memory of the radio telephone when the radio telephone is switched on or the removable memory is inserted in the reading device. This makes it easy to change the entire user interface, i.e. texts, keypad functions, alarms, etc., in such a way as to be more convenient to the user. It is much simpler to change a removable memory to another than it is to change program memory circuits within a radio telephone, and it does not require any special skills.

Brief Description of the Drawings

In the following the invention will be described by means of embodiments with reference to the attached drawing, wherein

5 Fig. 1 shows a perspective view of a radio telephone device according to the invention,

Fig. 2 shows a more detailed view of the display 7 of Fig. 1, and

10 Fig. 3 shows a schematic block diagram of the radio telephone device of Fig. 1.

Detailed Description of the Invention

The invention may be applied to almost any kind of conventional radio telephone device, e.g. a portable mobile phone or a car phone to which is added the
15 ability of using a removable memory. Fig. 1 shows, by way of an example, a radio telephone device of the invention which can be mounted e.g. in a vehicle, the device comprising a transceiver section 1 having a user interface formed by a display 7 and a keypad 8. To the
20 radio telephone device may also be connected e.g. a separate microphone 3 and a separate loudspeaker 2. Further, a line 9 connects a separate reading device 4 for a memory card or module to the device, the reading device having an input slot 6, through which a removable
25 memory 5, such as a memory card or module 5, can be inserted in the reading device 4 in such a way that it can later be easily removed or detached. An example for a portable mobile phone to which the invention can be applied is the portable mobile phone of German Offen-
30 legungsschrift 3,838,677, said mobile phone including a reading device for a memory card.

Fig. 2 shows an enlarged, more detailed view of a possible embodiment of the display 7, which is advantageously a liquid crystal display. Reference
35 number 71 indicates a line of indicators at the upper

edge of the display 7, in which different indicator fields FCN, ALPHA, HG, MFT, MENU, MUTE and MC indicate different modes of the radio telephone. For example, field MC indicates that the memory card 5 is in use.

5 There are further separate indicator fields 74, 75, 76 and 77 at the lower edge of the display. The actual alphanumeric display comprises two subdisplays 72 and 73. The upper subdisplay 72 comprises one alphanumeric line of display, displaying the characters or numbers

10 keyed in via the keypad 8 (i.e. the contents of the display buffer) and being e.g. 20 characters long. The lower subdisplay 73 comprises two alphanumeric lines of display, displaying different messages concerning the operation of the radio telephone and being e.g. 24

15 characters long. Examples for such messages include the type of the call received, the A subscriber number, different state messages and instructions to the user. The invention may be applied e.g. to changing the language and type of the texts shown on the subdisplay

20 73 of the display 7 in accordance with the user's wishes.

Fig. 2 shows a schematic block diagram of the radio telephone of Fig. 1, wherein a block 21 represents, in general, baseband and radio sections of a radio

25 telephone, such as a transceiver, a synthesizer, signaling circuits, interface circuits and baseband signal processing circuits. A separate microphone 3, a separate loudspeaker 2 and a separate antenna ANT may be connected to the block 21.

30 Block 22 represents, in general, a micro-processor circuitry controlling the baseband and radio sections, a bus 24 or the like interconnecting the block with a read-write memory 23 used as a work memory, a non-volatile read-only memory 26 used as a program

35 memory, and a display 7 and a keypad 8 forming a user

interface. All data, control, signalling etc. connections between the radio and baseband sections 21 and the microprocessor circuitry 22 are represented generally by reference number 25.

5 According to the invention, a reading device 4 is connected to the microprocessor circuitry 22 by the line 9, the microprocessor circuitry 22 being capable of reading the contents of the removable memory 5 inserted in the reading device by means of said reading
10 device. The type of the reading device is generally determined by the removable memory used. In the simplest form, the reading device 4 may here be a connecting means, which provides an electric connection between the memory circuits contained in the memory card or module
15 5.

 The removable memory 5 may be practically any removable memory suited for the purpose. In a preferred embodiment of the invention an 8 Kbyte SRAM module BS8E1, a 16 Kbyte SRAM module BS16D1-B or a 64 Kbyte
20 SRAM module CSC-064K-SM-04-M56 is used, depending on the storage capacity needed, all of these modules being manufactured by Fujisoku. A suitable reading device 4 is of the type CR40 and manufactured by Telenokia.

 In a preferred embodiment of the invention all
25 the texts to be displayed on the display 7 are stored in the removable memory 5 in the language selected by the user. The user interface software is then stored in the program memory 26 of the radio telephone. The texts shown on the alphanumeric display 7 may be stored in the
30 program memory 26 in one language (e.g. English), which is used as a default language when the removable memory 5 is not in the reading device 4. The microprocessor circuitry 22 fetches a translated version for the default language text from the removable memory 5 and
35 displays the translation on the alphanumeric display 7

when the removable memory 5 is in the reading device 4. The text displayed can then be changed by changing the type of the removable memory 5.

5 In yet another embodiment of the invention essentially the entire user interface software of a radio telephone is stored in a removable memory 5 and the remaining portion of the operating system of the radio telephone is stored in the program memory 26 of the radio telephone. The microprocessor circuitry 22
10 loads the user interface software from a removable memory 5 to the work memory 23 of the radio telephone when the radio telephone is switched on or the removable memory 5 is inserted in the reading device 4. This makes it easy to change the entire user interface, i.e. texts,
15 keypad functions, alarms, etc., in such a way as to be more convenient to the user.

The attached drawing and the description thereof are to be understood only as illustrating the invention. The details of the radio device according to
20 the invention may vary within the scope of the attached claims.

Claims

1. A radio telephone or the like, comprising
a microprocessor circuitry (22), a memory (23, 26), an
5 alphanumeric display (7), a keypad (8), and a reading
device (4) in which a removable memory (5) can be
inserted to enable reading under control of the micro-
processor circuitry, the memory containing the indi-
vidual data of a radio subscriber,
10 characterised in that said removable memory
(5) also contains versions of the texts to be shown on
the alphanumeric display (7) in the languages selected
by the user.

2. A radio telephone according to claim 1,
15 characterised in that alphanumerically
displayable texts are stored in the memory (23, 26) of
a radio telephone in one language, which is used as a
default language when a removable memory (5) is not in
the reading device (4), and that the microprocessor
20 circuitry (22) fetches a translated version for the
default language text from the removable memory (5) and
displays the translation on the alphanumeric display
when the removable memory (5) is in the reading device
(4).

25 3. A radio telephone according to claim 1,
characterised in that essentially the
entire user interface software of the radio telephone
is stored in a removable memory (5) and the remaining
portion of the operating system of the radio telephone
30 is stored in the memory (23, 26) of the radio telephone.

4. A radio telephone according to claim 3,
characterised in that the microprocessor
circuitry (22) loads the user interface software from
the removable memory (5) to the memory (23, 26) of the
35 radio telephone when the radio telephone is switched on

or the removable memory (5) is inserted in the reading device (4).

5 5. A radio telephone according to any one of claims 1 to 4, characterised in that said removable memory (5) is a memory card and that said reading device (4) is a card reading device.

10 6. A radio telephone according to any of claims 1 to 4, characterised in that said removable memory (5) contains an electronic memory circuit and that said reading device (4) is a connecting means for electrically connecting a memory circuit to a radio telephone.

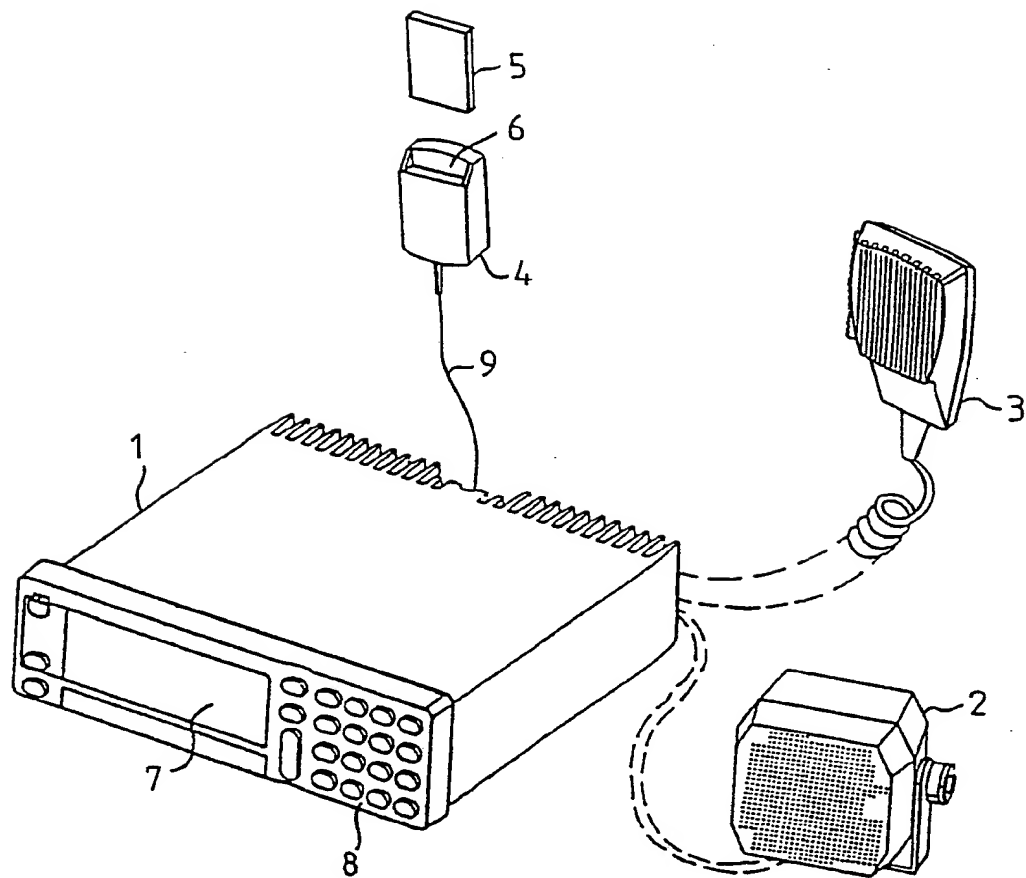


FIG. 1

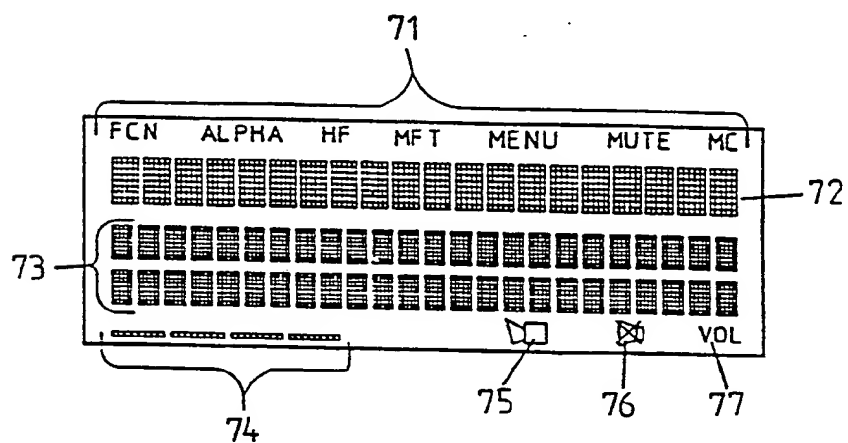


FIG. 2

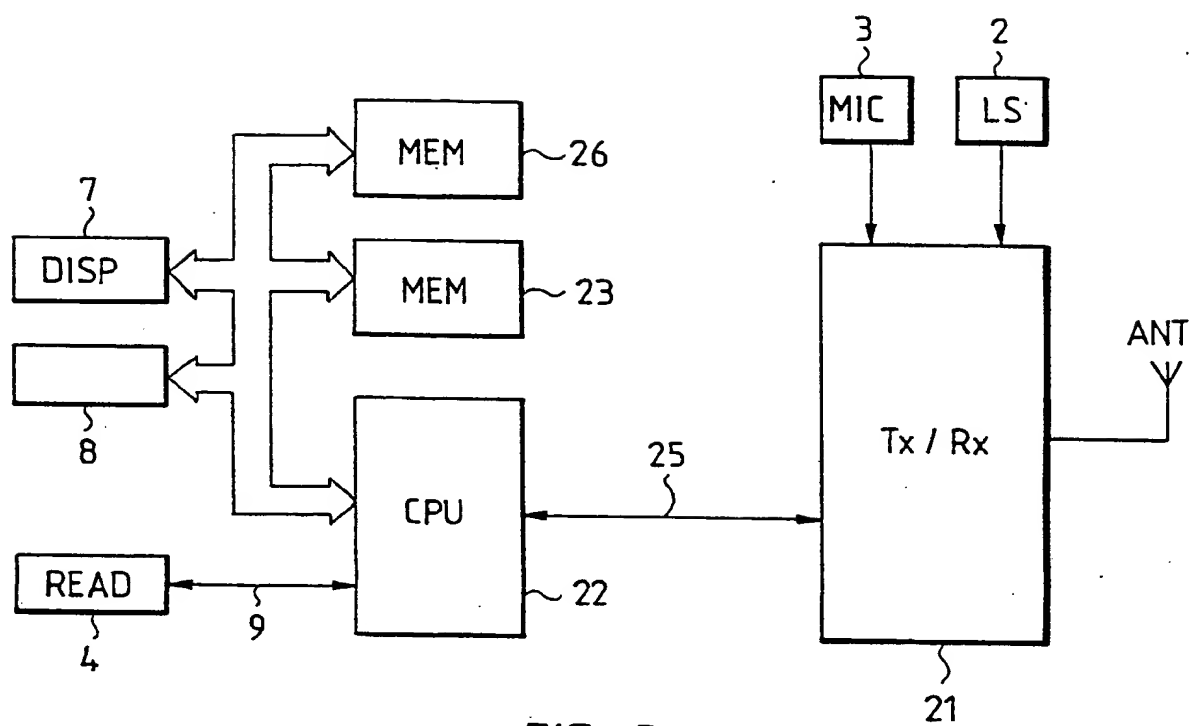


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 93/00065

A. CLASSIFICATION OF SUBJECT MATTER

IPC5: H04Q 7/04, H04M 1/00, H04B 1/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

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IPC5: H04M, H04Q, H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CLAIMS, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO, A1, 9112698 (MOTOROLA INC.), 22 August 1991 (22.08.91), page 11, line 12 - page 12, line 13, figures 2-3	1-6
A	EP, A2, 0369110 (ROBERT BOSCH GMBH), 23 May 1990 (23.05.90), column 2, line 40 - column 3, line 33, figure 1	1-6

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT
Information on patent family members

31/03/93

International application No.
PCT/FI 93/00065

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO-A1-	9112698	22/08/91	EP-A- 0468025	29/01/92
EP-A2-	0369110	23/05/90	DE-A- 3838677	17/05/90

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